Institutionalization of agricultural knowledge Management System for Digital Marginalized Rural Farming Community

Islam Faisal

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Md. Faisal Islam

33, Mirzapure Road, Yousuf Row, Khulna- 9100, Bangladesh

Padma Research and Development Organization
Khulna
31/1, Mirzapure Road, Yousuf Row, Khulna- 9100, Bangladesh

Abstract — Modern agricultural technology has led to a process of marginalisation. A weak agricultural economy producing insufficient food is frequently associated with a weak or nonexistent democracy and can lead to migration, social unrest, an unhealthy as well as unproductive labour force, and mismanagement or abuse of environmental resources.

The key framework for addressing these problems is *Agricultural Knowledge Management System* (AKMS), consisting of the organizations, sources of knowledge, methods of communication, and behaviours involved in the agricultural process. As farmers make critical decisions throughout the year, a typical household will rely on its' own accumulated experience and the support of local organizations. Thus, farmers were in need of a permanent solution to overcome these barriers to production.

By applying a participatory approach called Knowledge Brokering (linking rural farmers with the national and international researchers) the farmers' community could develop a self driven system to manage all those crucial issues. Designing ICT-enabled knowledge flows between these actors in any specific case requires careful consideration of the types of ICTs that are accessible by each group and the technological and conceptual packaging of information so that it can flow effectively from one user to the other. Effective ICT deployment explicitly considers the appropriate interfaces between the digital and non-digital worlds, so that those without access to digital ICTs can still benefit from an improved local information environment. These farmers need local support groups that will act as brokers between the available knowledge system and the individual needs of farming households.

Key words : Institutionalization, Knowledge Management, Knowledge Broking, Knowledge Broker

Résumé — I born in 1979 in Bangladesh. After studying engineering, I started to work as a volunteer in social development organizations in 1999. I want to bring an institutional shape of indigenous knowledge, especially on agriculture. I also plan to establish a university for indigenous knowledge promotion.

Being a progressive dedicated youth my passion is always insisting me to contribute for social transformation. Moved by the sorrows and distress of the poor and socio economic discrimination in respect of class, cast, creed and gender me along with a group of educated youth inspired by an inherent to form an organization, and named Padma signifying the name of most potential river of Bangladesh. as a tool for materialization of our dream – the dream of a democratic society within a socio-economic equity

and justice

I found that agriculture and agro-entrepreneurship could be the focus of the organization because agricultural sector is the largest and most critical economic sector as more than 70% of population lives in rural areas and economically dependent on the performance of agricultural production. Where as, around 75% of total population

Mots clés : Fellowship award of Global Knowledge Partnership on Youth Social Enterprise Initiative (YSEI) 2006-07 (http://ysei.org/?q=node/42), Paragon 100 fellowship 2009 organized by Foundation for Youth Social Entrepreneurship (FYSE), GSBI- Global Social Benefit Incubator from Santacalara University – California.

INSTITUTIONALIZATION OF AGRICULTURAL KNOWLEDGE MANAGEMENT SYSTEM FOR DIGITAL MARGINALIZED RURAL FARMING COMMUNITY

The rapid market and technological advances that are taking place in the area of information and communications technologies (ICTs) have an impact on almost all areas of society, not only in the north, but also in developing countries.

While the 'digital revolution' generates truly global information flows and profoundly changes the way businesses, markets and politics work, the term 'digital divide' indicates that not everybody benefits from these revolutionary changes. There is a wide gap between those who have access to ICTs and those who have not.

In the agro-economy based underdeveloped countries, where the population are living much under the poverty line, due to various mutually reinforcing causes like poverty, livelihood insecurity, inadaptation of modern technology, Socio-political unrest, gender discrimination, environmental degradation, natural disasters. The volume of the problem in some geographical areas are more acute.

Modern agricultural technology has led to a process of marginalisation. A weak agricultural economy producing insufficient food is frequently associated with a weak or nonexistent democracy and can lead to migration, social unrest, an unhealthy as well as unproductive labour force, and mismanagement or abuse of environmental resources.

In many cases, research results from agricultural research institutes and other fora are too academic to guide even an intermediary organization. Programs that create or reinforce partnerships between intermediary organizations and agricultural research institutions to produce accessible content in local languages and at the appropriate technical level will satisfy most community content needs, but success depends on intermediary organizations being the major partner, manager, and evaluator of the process.

Agricultural experts acquire knowledge which is generated in formal educational settings (schools, universities, research institutes) and circulated through the global network of professionals, institutions and publications. We call it therefore global, formal knowledge system. Farmers have usually received little formal education. They acquire knowledge by customary practice, trial-and-error and experience. They learn what they know from the social and cultural group they live with. Farmer knowledge constitutes a local, traditional knowledge system. If farmers belong to an indigenous group, their knowledge belongs to an indigenous knowledge system. Local, or indigenous knowledge systems are complex and embedded in traditional and customary (e.g. agricultural, curative) practices.

Knowledge transfers within one knowledge system, either formal or local, are relatively easy. However, transfers from a formal knowledge system to a local one – or vice versa -- are very difficult, because the transferred messages do not make much sense within the other knowledge system. Consequently, farmers may listen politely to agricultural advisors but still

do not change their practices. The challenge to TC projects consists in facilitating and improving the communication between agricultural professionals and farmers who have been educated in distinct knowledge systems.

The problem is fundamentally one of a real lack of coordination between researcher and local farmer. Adopting modern agricultural tools is not possible for local farmers mainly because of illiteracy. Farmers need less academic feedback than what they are currently receiving from agricultural research institutes. Consequently a demand and supply chain management system is to be developed for effective market promotion of agri-entrepreneur products with the participation of the farmers' association, trade union, agriculture dealers, credit providing institutes/organizations, and the market committee. This is a model for institutionalization of agriculture knowledge management system within the sphere of social entrepreneurship with a multidimensional impact on society.

Advances in ICTs have helped create an entirely new discipline, termed *knowledge management*. Effective knowledge management means that an organization or network of partners gets the right information to the right person at the right time in a user-friendly and accessible manner so that they can perform their jobs efficiently.

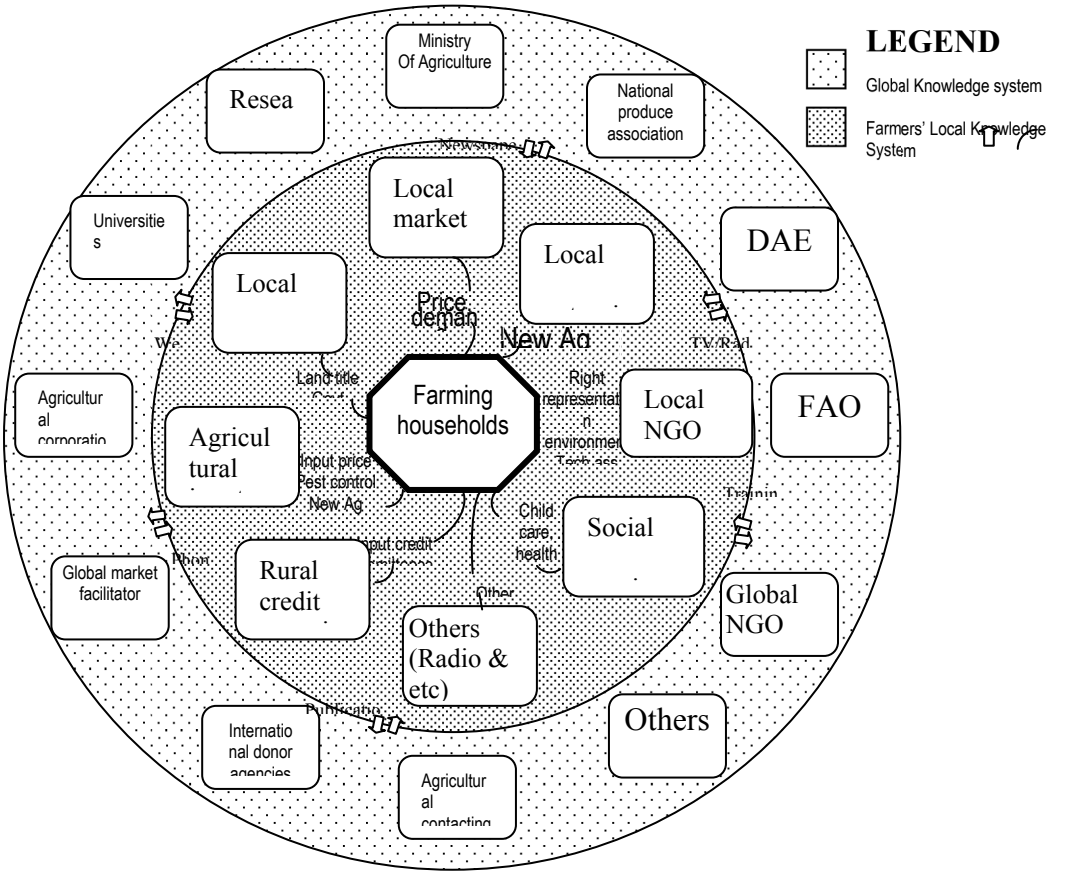
The critical information needs of agriculture and farming communities and their individual applications toward understanding of their overall role in promoting productive, equitable, and sustainable agriculture. The key framework for this is the *Agricultural Knowledge Management System* (AKMS), consisting of the organizations, sources of knowledge, methods of communication, and behaviors surrounding an agricultural process. Knowledge is not the same as information: knowledge includes information, understanding, insights, and other information that has been processed by individuals through learning and thought. As farmers make critical decisions throughout the year (e.g., credit applications, crop selection, tillage methods, pest control, harvesting, post-processing, marketing), a typical household is to rely on its own accumulated experience and the support of local organizations (e.g., producer associations, input suppliers, rural credit agencies, extension services, NGOs, schools and others). The household also receive radio and television broadcasts from more distant sources. Together, these form the local knowledge system accessible to a small farmer. The localized knowledge system represents information sources that are relatively accessible to a farming family and generally include an understanding of the farmer's specific context and needs through repeated and often reciprocal interactions.Often there is a higher degree of trust between farmers and the entities in their local AKS than between farmers and more distant entities, such as national ministries or global organizations.

Knowledge Management (KM) is a relatively novel management concept. It has been pushed by the rapid developments of Information and Communication Technology. ICT facilitates a speedy exchange of data, information and documents. There is groupware for communication; content management systems to organise and retrieve documents; expert systems, data mining and text mining systems, tracing services and search engines.. While the speed and ease to exchange data and information will increase, a new challenge for users emerges: to select relevant data, information and documents. To better understand potential and limitations it is important to recognise the differences between data, information and knowledge.

Knowledge Management and Knowledge Systems for Rural Development, illustrates the idea of distinct knowledge systems: local and more global, knowledge systems overlap only partially. If the overlap is small, communication between agricultural professionals and local people may be full of misunderstandings (noise). The more overlap, the easier farmer-expert communication gets. The area of shared knowledge can be expanded, if farmers and outside

experts spend more time together, exchange ideas in an open and respectful way and omit qualifying the others knowledge as true or false.

Figure 1: Globalized and Localized Agricultural Knowledge Management System Surrounding a Typical Farming household.



It is important to recognise that farmers often do not know how to solve a specific production problem but they still have complex, systematic knowledge in their heads. Unfortunately, it is of limited avail to ask a farmer, "how his knowledge system looks like". It is good guessing that a German farmer with a university degree would not be able to answer the question either. Nevertheless, we all know that traditional, indigenous farmers learn new things and adopt new technology. This process can be spurred, by bringing formally educated experts and researchers and traditional farmers holding little formal education closer together. The chances for knowledge growth in TC can be greatly enhanced if experts, researchers and farmers together

- build up mutual trust and respect
- develop a common language
- create a shared knowledge basis
- welcome and appreciate the other's knowledge (system)
- show a learning attitude
- spend time together for exchanging ideas
- spend time together working and investigating

Since many years, research and extension organisations are asked to become culturally more sensitive. The appeal is laudable but does not help practically to improve communication between farmers and experts, if experts have no clue as to the contents of a local knowledge system. To gain a systematic understanding of local knowledge usually requires years of anthropological-technical research. This cannot be done during the regular life span of a project.

Bode concludes that knowledge management and communication between different stakeholders in the value chain must improve. Study focuses on knowledge management in value chains. Some important findings are:

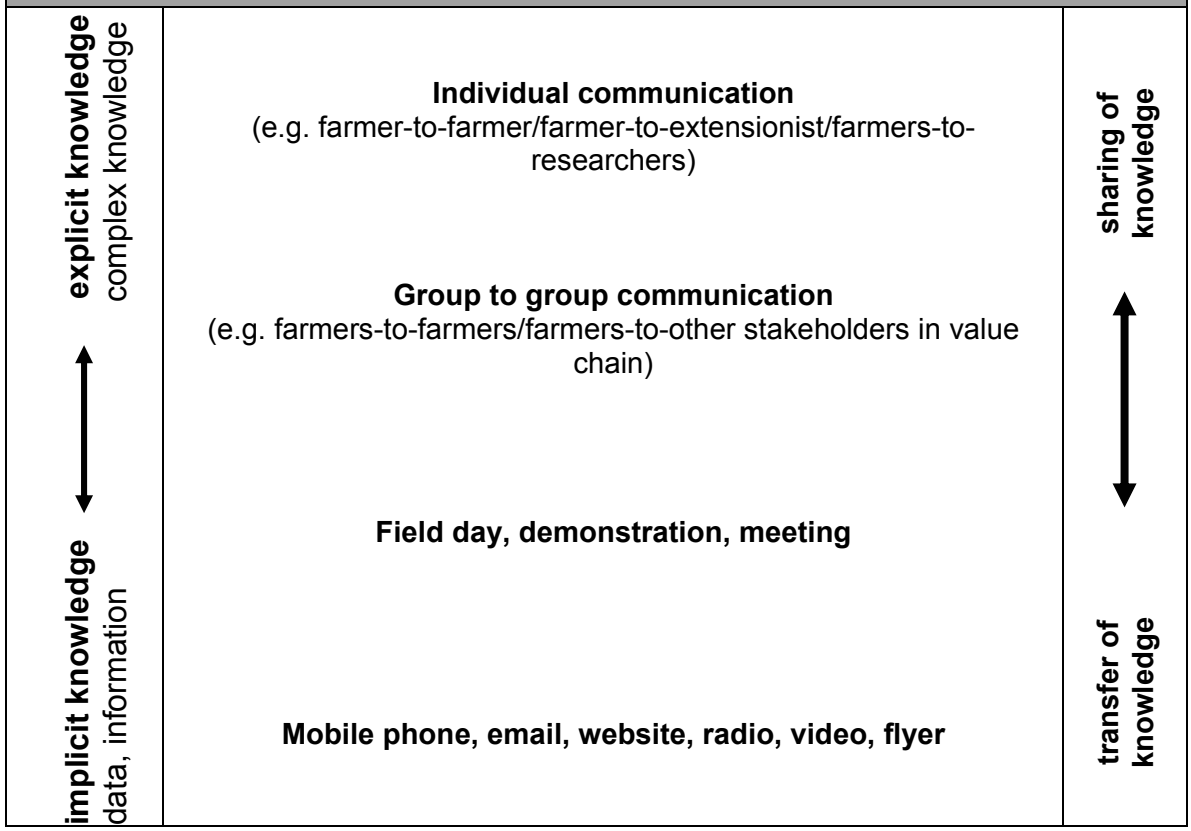
- Data-like information as well as complex, implicit knowledge is poorly managed within the association.
- Communication flows slow down at the farmers' side and are hampered by different perceptions and languages.
- Transaction costs for knowledge management are already high.

Service organisations capable of providing answers must be identified. Finally, to keep a check on transaction costs, traditional ways to communicate among the coffee growers should be identified and strengthened.

By applying a participatory approach called Knowledge Brokering (linking rural farmers with the national and international researchers) the farmers' community could develop a self driven system to manage all those crucial issues. Designing ICT-enabled knowledge flows between these actors in any specific case requires careful consideration of the types of ICTs that are accessible by each group and the technological and conceptual packaging of information so that it can flow effectively from one user to the other. Effective ICT deployment explicitly considers the appropriate interfaces between the digital and non-digital worlds, so that those without access to digital ICTs can still benefit from an improved local information environment. From the perspective of the smallholder farmer, the key question is how to gain access to information and resources. These farmers need local support groups that will act as brokers between the available knowledge system and the individual needs of farming households. Developing economical local ICT access for the rural poor and ensuring appropriate content is the essence of bridging the digital divide. Agricultural knowledge and information needs to be managed like any other key business input.

Groups of educated youth from the particular farming community who are deeply rooted in the community and highly accepted within their society as knowledge brokers could be involved. They will be following a useful approach; mapping out the information and communication needs of clients within their agricultural economic/social system and assisting the key elements in that system to find information they need, when they need it, in accessible terms and language, and at prices that are realistic given available resources and sustainable development needs, to incorporate growth, equity, and environmental dimensions. From this starting point, an effective ICT strategy can take a *knowledge brokering* approach: identifying who needs information, who can supply the information, what formatting and delivery mechanism will allow the knowledge provider and consumer to communicate and share information, and what institutional/market structure will provide the appropriate incentives for such sharing to take place.

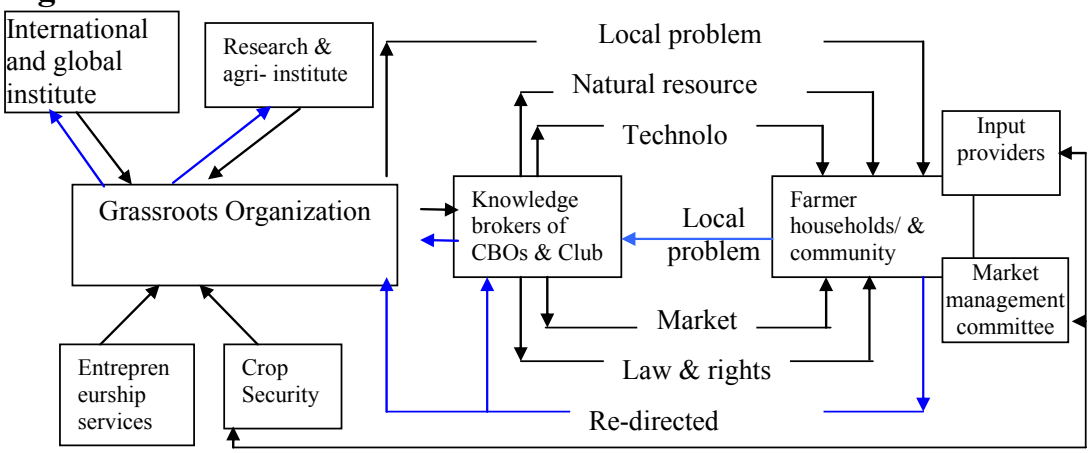
Figure 2: Means of communication and Knowledge type



The presence of ICTs that facilitate choice and feedback has changed the role of local intermediate organizations such as clubs & CBOs, extension workers, producers' associations, and input providers that work closely with farming families. For many regions, particularly in rural areas, direct use of ICTs by farmers – with the exception of digital telecommunication – may take decades. On the other hand, local intermediary organizations are significantly more likely to have the organizational capacity, human capacity, and access to the necessary infrastructure to take advantage of ICTs to deliver needed services to the rural poor. Their role will increasingly change from disseminating information sent to them by official knowledge sources to acting as *knowledge brokers* that comb various sources to help clients find the information and resources they need and place that information in a local context.

This interactive process relies on strong linkages with various agricultural actors that enable farmers at the grassroots to share information with national and global expertise. The knowledge provided responds to local farmers' particular needs in an understandable local language. Also, local management system for crop security input & output (marketing). And finally give an institutional model of multi stakeholders participation for agri-entrepreneurship and capacity building of youth entrepreneurs as knowledge broker. (local content development, b2b ICT enable platform, scaling up local youth as knowledge broker)

Figure 3:



Re-directional Information dissemination and feed back collection mechanism

Establishing a 'digital revolution' through facilitating access of ICT to enhance the efficiency and effective farmer's involvement at AKMS. At the local level the rural farmer practice the traditional and one way communicative way for information. By ICT rural farmer will overcome the all the barriers of agricultural aspect.

The beauty of the participatory content development model is that it meets several development objectives simultaneously: it identifies gaps in needed content, develops them in a language and terminology accessible to target users, increases demand for rural ICT access, builds individual and organizational ICT skills in rural communities, and strengthens the capacity of communities to engage in democratic dialogue and contribute to regional and global knowledge societies. In many cases, the content is likely to retain its value to users even for a long time.

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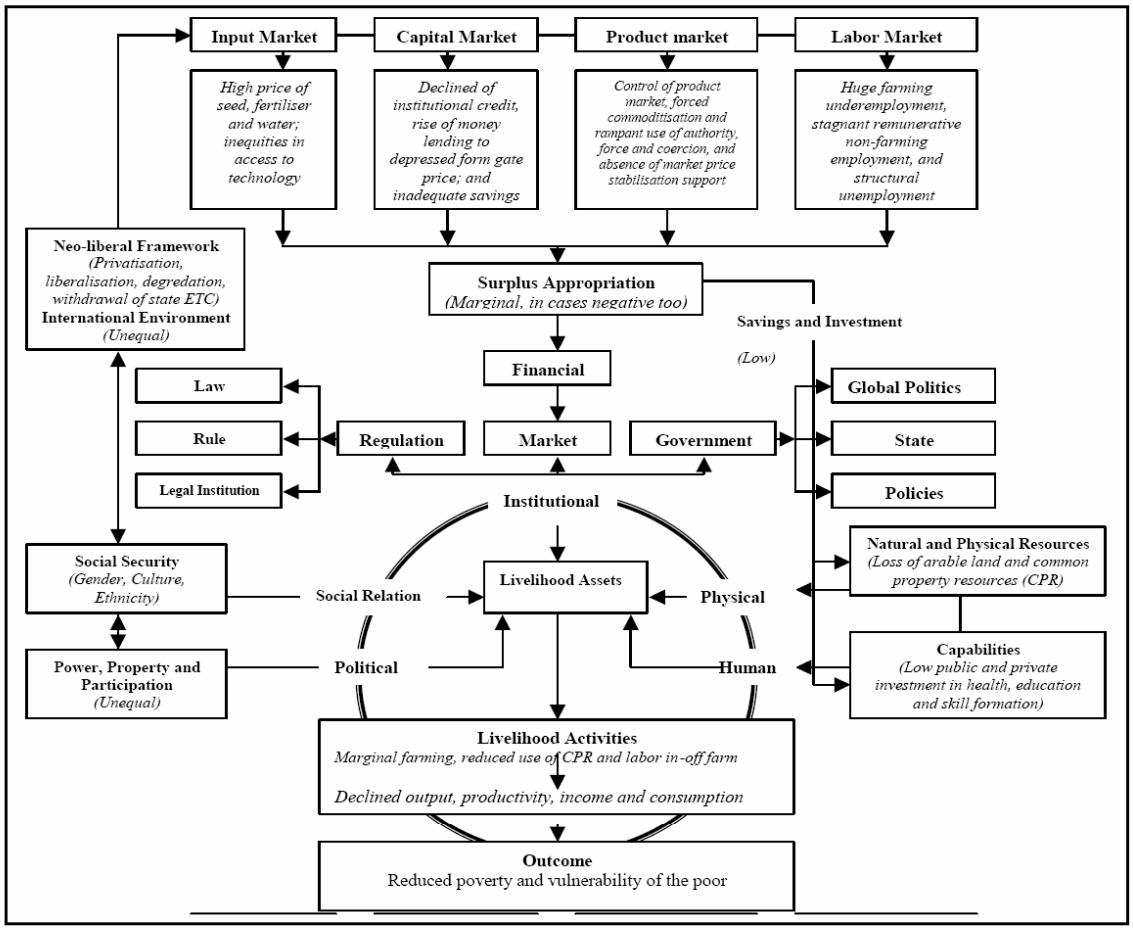
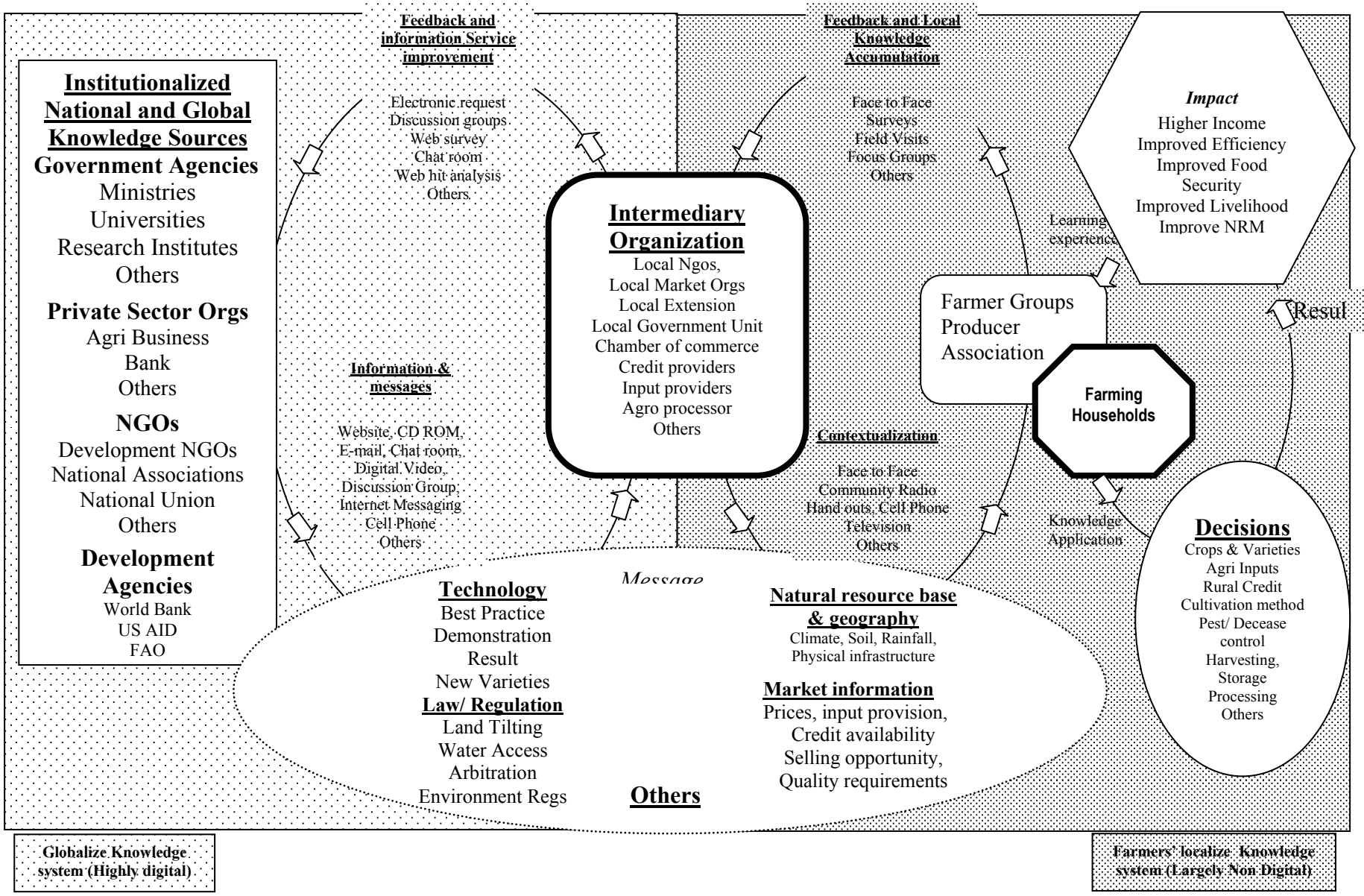
APPENDIX

Livelihoods Framework





Local Intermediary Organization Are The Critical Knowledge Broker In The Agricultural Knowledge System